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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,708	04/18/2001	Lee Felsenstein	INT1P212	8801

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EXAMINER

LE, TOAN M

ART UNIT PAPER NUMBER

2863

DATE MAILED: 07/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/838,708

Applicant(s)

FELSENSTEIN ET AL.

Examiner

Toan M Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-11,69-71 and 75-78 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-11,69-71 and 75-78 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☒ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Takemoto et al..

Referring to claim 1, Takemoto et al. disclose a position detection system for locating an object including a magnetic field generator (col. 13, line 29), comprising: an array of parallel conductors 22 (figures 1 and 6) responsive to a magnetic field generated by the magnetic field generator; a plurality of receivers 26 (figures 1 and 6) each associated with a parallel conductor (col. 13, lines 29-39; col. 14, lines 1-4); and a plurality of drivers using a sinusoidally-varying, multi-phase driving technique, each coupled with a parallel conductor and configured to drive current through to produce an energized field used in locating the object (col. 6, lines 64-67; figures 6 and 8).

As to claim 2, Takemoto et al. disclose a position detection system for locating an object including a magnetic field generator, wherein the array of parallel conductors 22 is configured to locate the object along a measurement path (figures 1 and 6).

Referring to claim 3, Takemoto et al. disclose a position detection system for locating an object including a magnetic field generator, wherein the measurement path comprises a

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measurement axis, and the array of parallel conductors is orthogonal to the measurement axis (figures 1 and 6).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemoto et al..

Referring to claims 5-9, Takemoto et al. disclose a position detection system for locating an object including a magnetic field generator (col. 13, line 29), comprising: an array of parallel conductors 22 (figures 1 and 6) responsive to a magnetic field generated by the magnetic field generator; a plurality of receivers 26 (figures 1 and 6) each associated with a parallel conductor (col. 13, lines 29-39; col. 14, lines 1-4); and a plurality of drivers using a sinusoidally-varying, multi-phase driving technique, each coupled with a parallel conductor and configured to drive current through to produce an energized field used in locating the object (col. 6, lines 64-67; figures 6 and 8), wherein the return conductor is disposed at an end of the array of parallel conductors (col. 10, lines 8-12; figure 12).

Takemoto et al. does not teach a position detection system for locating an object including a magnetic field generator, wherein at least one driver is configured to send current

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through the associated parallel conductor in one direction, and at least one driver is configured to send current through associated parallel conductor in an opposite direction so that the net current through the array of parallel conductors is substantially zero and/or to balance current between the drivers to produce a constant offset to the energizing fields produced by the array of parallel conductors.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have had at least one driver is configured to send current through the associated parallel conductor in one direction, and at least one driver is configured to send current through associated parallel conductor in an opposite direction so that the net current through the array of parallel conductors is substantially zero and/or to balance current between the drivers to produce a constant offset to the energizing fields produced by the array of parallel conductors for balancing the net current flowing through the conductors to eliminate electromagnetic interference in the measuring circuitry to have a more precise position detection system.

Claims 10-11, 69-71, and 75-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemoto et al. in view of Dames et al..

Referring to claims 10-11, Takemoto et al. disclose a position detection system for locating an object including a magnetic field generator (col. 13, line 29), comprising: an array of parallel conductors 22 (figures 1 and 6) responsive to a magnetic field generated by the magnetic field generator; a plurality of receivers 26 (figures 1 and 6) each associated with a parallel conductor (col. 13, lines 29-39; col. 14, lines 1-4); and a plurality of drivers using a sinusoidally-varying, multi-phase driving technique, each coupled with a parallel conductor and configured to

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drive current through to produce an energized field used in locating the object (col. 6, lines 64-67; figures 6 and 8).

Takemoto et al. does not teach a position detection system for locating an object including a magnetic field generator, wherein the magnetic field generator includes a resonator includes an inductor and capacitor that is energized by the energizing field.

Dames et al. discloses a a position detection system for locating an object including a magnetic field generator, wherein the magnetic field generator includes a resonator includes an inductor and capacitor that is energized by the energizing field (col. 24, lines 51-56; figure 5a).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have added a resonator includes an inductor and capacitor that is energized by the energizing field as described in the reference of Dames et al. into the system of Takemoto et al. to provide a greatest magnetic coupling among the conductors to have a more precise position detection system.

As to claims 69-71 and 75-78, Takemoto et al. discloses a method incorporated into a system for detecting position of an object, comprising: providing an array of parallel conductors 22 (figures 1 and 6); providing a plurality of receiver 26 (figures 1 and 6); associated each receiver with a parallel conductor (col. 13, lines 32-33; figures 1 and 6); providing a plurality of drivers 41 (figure 6) using a sinusoidally-varying, multi-phase driving technique (col. 6, lines 64-67; figures 6 and 8); associating each driver with a parallel conductor to drive current through the parallel conductor to produce an energizing field used in locating the object (col. 13, lines 29-39); further comprising configuring the array of parallel conductors to locate the object along the measurement path wherein the measurement path comprises a measurement axis, and the array

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of parallel conductors spaced by a constant spacing is orthogonal to the measurement axis (figures 1 and 6).

Takemoto et al. does not teach a method for detecting position of an object including using each receiver to receive current from the associated parallel conductor to sense magnetic flux from the resonator, wherein the array of parallel conductors includes spacing the parallel conductors apart by a sinusoidally variable spacing according to a position of each parallel conductor in the array of parallel conductors.

Dames et al. teaches a method for detecting position of an object including using each receiver to receive current from the associated parallel conductor to sense magnetic flux from the resonator, wherein the array of parallel conductors includes spacing the parallel conductors apart by a sinusoidally variable spacing according to a position of each parallel conductor in the array of parallel conductors (figure 2a).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have applied a resonator with the array of parallel conductors includes spacing the parallel conductors apart by a sinusoidally variable spacing according to a position of each parallel conductor in the array of parallel conductors as described in the Dames et al. reference into the method of Takemoto et al. to improve accuracy of detecting position of an object.

#### ***Response to Arguments***

Applicant's arguments filed 5/23/03 have been fully considered but they are not persuasive.

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Referring to claims 1-3, 5-11, 69-71, and 75-78, Applicant argues that “Takemoto et al. does not recite the claimed sinusoidally-varied or multi-phase driving technique”.

Takemoto et al. disclose “a continuous sine wave with 0 V as the center having frequency 1 MHz is preferred, for example, as shown in FIG. 8, as a voltage waveform 81 fed to the transmission line 22” (col. 6, lines 64-67).

### ***Conclusion***

#### **THIS ACTION IS MADE FINAL.**

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan M Le whose telephone number is (703) 305-4016. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John barlow can be reached on (703) 308-3126. The fax phone numbers for the



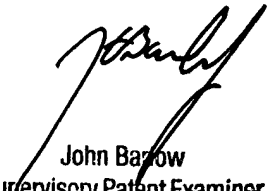
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organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0655.

Toan Le

July 24, 2003



John Barlow  
Supervisory Patent Examiner  
Technology Center 2800